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A new species of the genus *Atelopsalis* (Acari: Halacaridae) from Zanzibar, Tanzania

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Abstract: A new halacarid species belonging to the genus *Atelopsalis* is described from the east coast of Zanzibar, Tanzania. *Atelopsalis zanzibari* sp. nov. is characterized by an anterior areola and two longitudinal costae on anterior dorsal plate, posterior dorsal plate with four costae, genu I with one spine, genu II devoid of spine. This is the first report of the genus *Atelopsalis* from Tanzania.

Résumé : *Une nouvelle espèce du genre* Atelopsalis *(Acari : Halacaridae) de Zanzibar, Tanzanie.* Une nouvelle espèce de d'Halacaridae du genre *Atelopsalis* est décrite de la côte est de Zanzibar (Tanzanie). *Atelopsalis zanzibari* sp. nov. est caractérisée par une aréole antérieure et deux côtes longitudinales sur la plaque dorsale antérieure, la plaque dorsale postérieure avec quatre côtes, genu I avec une soie, genu II sans soie. Ceci est le premier signalement du genre *Atelopsalis* de la Tanzanie.

Keywords: Marine Halacaridae ● New species ● *Atelopsalis* ● Zanzibar ● Tanzania

Introduction

The genus *Atelopsalis* Trouessart, 1896 is known from the Atlantic, Pacific, Indian and Southern Ocean, and is found from the intertidal zone to abyssal depths. *A. tricuspis* Trouessart, 1896 was recorded from 1410 m depth in the Gulf of Gascogne (Trouessart, 1896) and from 256-291 m on Josephine Bank, Atlantic Ocean (Bartsch, 1973). *A. newelli* Bartsch, 1973 was found at 193-291m on Josephin Bank (Bartsch, 1973) and *A. aliger* Bartsch, 1977 was recorded from intertidal habitats of the Galapagos Islands, eastern Pacific Ocean (Bartsch, 1977). Bartsch (1982) also recorded *A. ridens* Bartsch, 1982 from 335-390 m depth and *Atelopsalis* sp. from 750 m in the northeast of Mozambique channel, western Indian Ocean. *A. pacifica* Bartsch, 1985 was taken from 15 m depth at Mactan Island, Cebu, the Philippines, Sulu Sea, western Pacific Ocean (Bartsch, 1985); *A. pacifica* has also been collected among

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intertidal coralline algae *Jania rubens* (Linnaeus) Lamouroux off Chatam Island, Andaman Islands, Andaman Sea, in the Bay of Bengal (Sarma & Chatterjee, 1993); from Rottnest Island (Duke Rock, 7-10 m depth) off Western Australia, eastern Indian Ocean (Bartsch, 2007) and from Esperance, southern coast of Western Australia, Duke of Orleans Bay, Southern Ocean (Bartsch, 2007). *A. meteorensis* Bartsch, 2002 was recorded from Great Meteor Semount at a depth of 332 m (Bartsch, 2002). Pepato & Tiago, 2004 described *A. atlantica* Pepato & Tiago, 2004 among bivalve Mollusca from the intertidal rocky shore of Caraguatatuba, on the north coast of São Paulo state in southeastern Brazil, Atlantic Ocean. In this paper we describe a new species *Atelopsalis zanzibari* collected from the east coast of Zanzibar, Tanzania, in the western Indian Ocean. The genus *Atelopsalis* is recorded for the first time from Tanzania.

Materials and methods

Meiofauna was collected from Matemwe (05°52'S, 39°21'E) along the east coast of Zanzibar, Tanzania among coral rubble of *Fungia* and *Tubipora* at 0.5 m water depth. Samples were washed with filtered seawater over a 38 µm sieve and stored in 80% ethanol.

Halacarids were sorted under a binocular microscope, cleared in lactic acid and mounted in glycerine jelly. Drawings were prepared using a camera lucida. The positions of setae and gland pores on dorsal plates are given in a decimal system, with reference to the length of a plate, from the anterior to the posterior margin. Type specimens will be deposited in the museum of Biological Oceanography Division, National Institute of Oceanography, Goa, India.

The following abbreviations are used in the text and figure legends: AD, anterior dorsal plate; AE, anterior epimeral plate; ds_{1-6}, dorsal setae 1-6 on idiosoma; GA, genitoanal plate; GO, genital opening; OC, ocular plate(s); PAS, parambulacral seta(e); PD, posterior dorsal plate; PE, posterior epimeral plate(s); PGS, perigenital setae; P_{1-3}, first to third palpal segment; SGS, subgenital setae.

Systematics

Family Halacaridae Murray, 1877
Subfamily Halacarinae Viets, 1927
Genus *Atelopsalis* Trouessart, 1896

Diagnosis: Gnathosoma short; palps 3- segmented and attached laterally to basis gnathosoma, hardly surpassing tip of rostrum. Leg I longer and wider than legs II-IV. Telofemur I large, often with cuticular spiniform lamellae. Tarsus I with 3 dorsal setae, 1 dorsolateral solenidion and 3 ventral setae. Tarsus II with 3 dorsal setae, 1 dorsomedial solenidion, and usually 1 long ventral seta. AE with a pair of large epimeral vesicles near insertion of leg II. Males with 4-5 pairs PGS, 4 pairs SGS; females with 3 pairs PGS, 1-2 pairs SGS. Two nymphal stages.

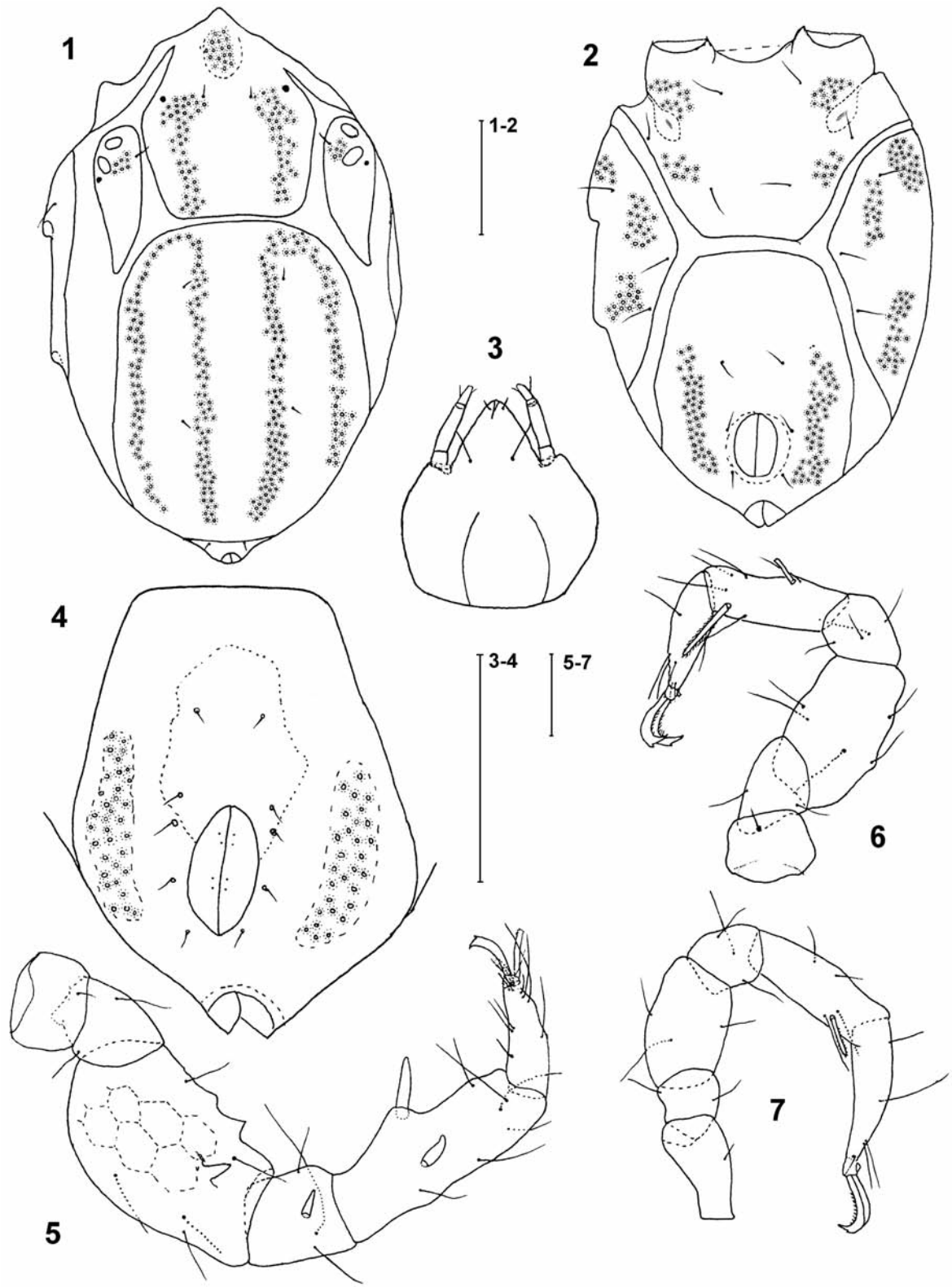
Atelopsalis zanzibari sp. nov.
(Figs 1-7)

Material examined

Holotype: ♀, Matemwe (5°52'S, 39°21'E), east coast of Unguja, Zanzibar, Tanzania (among coral rubble, 0.5 m depth), August 17th 2004 (*leg.* M. Raes & H. Gheerardyn). Paratypes: 2 ♀♀, 1 ♂ locality same as holotype. Additional material: 1 ♀ locality same as holotype.

Female. Idiosoma 214-248 µm long. Areolae and costae on dorsal plates with rosette pores, each rosette pore with prominent ostium and 6-10 canaliculi; remainder of plates panelled. AD 87-93 µm long, with frontal spine; 1 anterior areola and 2 longitudinal costae; anterior areola with about 17-23 rosette pores; costae 2-3 rosette pores wide at the middle and posteriorly, 4-5 rosette pores wide anteriorly. Paired ds_1 situated at 0.36 level of AD on anterior edge of costae; pair of gland pores near anterolateral margin on AD. Each OC with 2 corneae, areola with about 6-7 rosette pores medial to corneae, gland pore distal to posterior cornea and close to lateral margin of OC. Setae ds_2 on OC. Eye spots (marked by brownish pigment) present anteriorly on AD and near corneal zone on OC. PD 122-148 µm long, with 4 costae, paired middle costae 2- rosette pores wide anteriorly and 2-3-rosette pores wide posteriorly, paired lateral costae 1-2- rosette pores wide, lateral costa and middle costa joined anteriorly; about 6 panels wide between two middle costae, while about 4-5 panels wide between middle and lateral costae. Some panels near median portions of AD and PD subdivided, rest of panels not subdivided. Position of ds_3 not clear, ds_4 and ds_5 on panelled area of PD between middle and lateral costae, ds_6 on dorsal side of anal plate.

All ventral plates separate. AE with 3 pairs of setae and a pair of epimeral vesicles near insertion of leg II, pair of areolae (with rosette pores) posterior to insertion of leg I and paired areolae between lateral and posterior setae on AE. Posterior margin of AE almost truncate. Each PE with 1 dorsal and 3 ventral setae; 2 ventromedial and 2 lateral areolae. Few panels present near posterolateral margin of AE. GA 128-130 µm long, anterior margin slightly arched. GO 31-34 µm long; distance between anterior end of GO and that of GA about 2.10-2.40 times GO length. GA with 3 pairs of PGS;1 pair of SGS present. Paragenital areolae well developed extending to level of PGS-I.



Figures 1-7. *Atelopsalis zanzibari* sp. nov., 1-3, 5-7: female; 4: male. **1.** Idiosoma, dorsal. **2.** Idiosoma, ventral. **3.** Gnathosoma (drawn from paratype female). **4.** GA of male. **5-7.** Legs I-III. Scale bars: 1-4 = 50 µm, 5-7 = 20 µm.

Figures 1-7. *Atelopsalis zanzibari* sp. nov., 1-3, 5-7 : femelle; 4 : mâle. **1.** Idiosome, vue dorsale. **2.** Idiosome, vue ventrale. **3.** Gnathosome (paratype femelle). **4.** GA du mâle. **5-7.** Pattes I-III. Échelle: 1-4 = 50 µm, 5-7 = 20 µm.

Table 1. Comparison of characteristics between *Atelopsalis zanzibari* sp. nov. and other species of the genus *Atelopsalis*.
Tableau 1. Comparaison des caractéristiques de *Atelopsalis zanzibari* sp.nov.avec les autres espèces du genre *Atelopsalis*.

	A. aliger	*A. atlantica*	*A. meteorensis*	*A. newelli*	*A. pacifica*	*A. ridens*	*A. tricuspis*	*A. zanzibari*
Idiosoma Length (µm)	♂: 201	♀: 208-213	♂: 220	♀: 187	♂: 171-204; ♀: 187-213	♀: 194	♀: 218	♂: 211 ♀: 214-248
Frontal Process on AD	Present	Present	Present	Absent	Present	Absent	Present	Present
Cornea on OC	2	2	2	Absent	2	Absent	2	2
Areola (rosette pores) near corneal zone on OC	Absent	Present	Absent	Absent	Absent	Absent	Absent	Present
Posterior part of OC	Tapering posteriorly	Caudate	Blunt	Transversely divided	Tapering posteriorly	Slightly blunt	Caudate	Tapering posteriorly
Costae on PD	2	2	2	Absent	2	-	2	4
Areolae near posterolateral area of AE	Absent	Present	Absent	Absent	Present	-	Present	Absent
Spine on genu I	0	0	0	2	0	1	0	1
Spine on genu II	0	0	0	0	0	1	0	0
Rosette pores on ventrolateral side of gnathosoma	Present	Present	Absent	Absent	Present	Absent	Present	Absent
Locality	Galapagos Islands	South Eastern Brazil	Great Meteor Sea mount	Josephin Bank	Mactan Is., Philippines; Australia; Andaman Is., lndia	Mozambique Channel	Gulf of Gascogne, Josephin Bank	Zanzibar, Tanzania

Gnathosoma 41-45 µm long. Rostrum about 0.33-0.34 times overall length of gnathosoma. Gnathosomal base with delicate panels ventrally. Basal pair of maxillary setae long, inserted on base of rostrum, 2 pairs of delicate setae at apex of rostrum. Palps slender, 3 segmented and attached laterally with the basis gnathosoma; P_1 and P_2 without seta, P_3 with 1 basal seta, 1 distal small seta and 1 small spur apically.

Leg I stout and longer than legs II-IV. Chaetotaxy of legs: trochanters I-IV, 1-1-1-0; basifemora I-IV, 2-2-2-2; telofemora I-IV, 5-5-3-3; genua (patella) I-IV, 4-4-3-3; tibiae I-IV, 8-7-5-5; tarsi (PAS excluded) I-IV, 7-5-4-3. Telofemur I with ventrolateral and ventromedial spiniform lamellae (cuticular spines). Surface of telofemur I reticulate. Telofemur I and tibia I almost equal in length. Genua shorter than tibiae and telofemora. Genu I with 1 spine. Tibia I with 2 blunt spines. Tibia II with 1 thick, pectinate ventromedial seta and 1 small blunt dorsomedial spine. Tibiae III and IV each with 1 thick, pectinate ventromedial seta. Tarsus I with 3 dorsal setae, 1 spsolenidion, 3 ventral setae 2 doublets eupathid PAS. Tarsus II with 3 dorsal setae, 1 ventral seta, 1 solenidion and 2 single eupathid PAS. Tarsus III with 4 dorsal setae (the distance between 2 basal setae more than the height of that tarsus) and a pair of small PAS. Tarsus IV with 3 dorsal setae and a pair of small PAS. Tarsi I-IV with 2 lateral claws and 1 small median claw. Lateral claws with accessory process dorsally. Lateral claws of legs II-IV with ventral pecten.

Male. Idiosoma 211 µm long. Middle costae on PD 1-2 rosette pores wide, lateral costae 1 rosette pore wide. Panels on dorsal plates mostly not subdivided. Base of gnathosoma ventrally panelled. GA 98 µm long, 78 µm wide, anteriorly truncate. GO 29 µm long, distance between anterior end of GO and that of GA about 1.68 times of GO length; 5 pairs PGS and 4 pairs SGS present. Spermatopositor large, extending well beyond the anterior margin of GO and anterior PGS. Paragenital areolae well developed extending anteriorly beyond anterior margin of GO.

Remarks

Atelopsalis zanzibari sp. nov. is similar to *A. newelli* Bartsch, *A. ridens* Bartsch, and *Atelopsalis sp*. (of Bartsch, 1982), due to presence of spine on genu I, but easily distinguishable from these species in having frontal process on AD and corneae on OC. *A. newelli* has 2 spines on genu I, while 1 spine is present in *A. zanzibari*. *A. ridens* has 1 spine on genu II, while spines are lacking on that segment in *A. zanzibari*. The new species also differs from congeneric species in having 4 costae on PD. Further comparisons of characteristics between *A. zanzibari* and other named species of the genus *Atelopsalis* are given in table 1.

Etymology

The specific name, *zanzibari*, alludes to the type locality of this new species, Zanzibar.

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